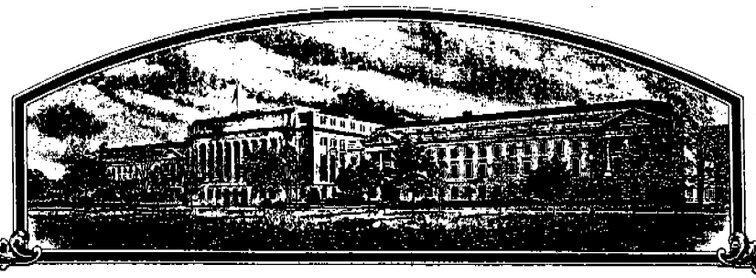


No. 7700031

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Purdue University
Agricultural Experiment Station and A.R.S., U.S.D.A.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF seventeen YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW,* [THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM,] TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS REQUIRED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

*[Waived]

WHEAT

'Beau'

In Testimony Whereof, *I have hereunto set my hand and caused the seal of the* Plant Variety Protection Office *to be affixed at the City of* Washington *this* 16th *day of* May *in the year of our Lord one thousand nine hundred and* seventy-seven

Attest:

Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

Secretary of Agriculture

FORM GR-470
(1-76)

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
PLANT VARIETY PROTECTION OFFICE
NATIONAL AGRICULTURAL LIBRARY
BELTSVILLE, MARYLAND 20705

FORM APPROVED
OMB NO. 40-R3712

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: *See Reverse.*

1a. TEMPORARY DESIGNATION OF VARIETY	1b. VARIETY NAME	FOR OFFICIAL USE ONLY	
	BEAU	PV NUMBER 7700031	
2. KIND NAME	3. GENUS AND SPECIES NAME	FILING DATE 1-24-77	TIME 12:00 (A.M.) P.M.
Wheat	Triticum aestivum	FEE RECEIVED $250.00 $250.00 $250.00	DATE 1-24-77 3-11-77
4. FAMILY NAME (BOTANICAL)	5. DATE OF DETERMINATION		
Gramineae	January 1, 1976		

6. NAME OF APPLICANT(S)	7. ADDRESS (*Street and No. or R.F.D. No., City, State, and ZIP Code*)	8. TELEPHONE AREA CODE AND NUMBER
Purdue University Agricultural Experiment Station and USDA - ARS	Agricultural Administration Building Purdue University West Lafayette, Indiana 47907 Washington, D. C. 20250	317-749-6005

9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: (*Corporation, partnership, association, etc.*)	10. IF INCORPORATED, GIVE STATE AND DATE OF INCORPORATION	11. DATE OF INCORPORATION

12. Name and mailing address of applicant representative(s), if any, to serve in this application and receive all papers:
Dr. B. J. Liska, Director
Agricultural Experiment Station
Purdue University
West Lafayette, Indiana 47907

13. CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:

- [X] 13A. Exhibit A, Origin and Breeding History of the Variety *(See Section 52 of the Plant Variety Protection Act.)*
- [X] 13B. Exhibit B, Novelty Statement.
- [X] 13C. Exhibit C, Objective Description of the Variety *(Request form from Plant Variety Protection Office.)*
- [X] 13D. Exhibit D, Additional Description of the Variety.

14A. Does the applicant(s) specify that seed of this variety be sold by variety name only as a class of certified seed? *(See Section 83(a). (If "Yes," answer 14B and 14C below.)* [X] YES [ ] NO

14B. Does the applicant(s) specify that this variety be limited as to number of generations?	14C. If "Yes," to 14B, how many generations of production beyond breeder seed?
[X] YES [ ] NO	[X] FOUNDATION [X] REGISTERED [X] CERTIFIED

15. Does the applicant(s) agree to the publication of his/her (their) name(s) and address in the Official Journal? [X] YES [ ] NO

16. The applicant(s) declare(s) that a viable sample of basic seed of this variety will be deposited upon request before issuance of a certificate and will be replenished periodically in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

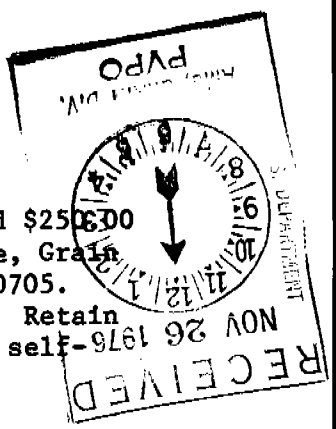
11/22/76
(DATE)

(SIGNATURE OF APPLICANT)

00001

(DATE)

(SIGNATURE OF APPLICANT)



INSTRUCTIONS

GENERAL: Send an original copy of the application, exhibits and $250.00 fee to U.S. Dept. of Agriculture, Agricultural Marketing Service, Grain Division, National Agricultural Library, Beltsville, Maryland 20705. (See Section 180.175 of the regulations and rules of practice.) Retain one copy for your files. All items on the face of the form are self-explanatory unless noted below.

ITEM

5 Give the date the applicant determined that he had a new variety based on (1) the definition in Section 41(a) of the Act and (2) the date a decision was made to increase the seed.

13a Give (1), the genealogy, including public and commerical varieties, lines, or clones used, and the breeding method. (2), the details of subsequent stages of selection and multiplication. (3), the type and frequency of variants during reproduction and multiplication and state how these variants may be identified and (4), evidence of stability.

13b Give a summary statement of the variety's novelty. Clearly state how this novel variety may be distinguished from all other varieties in the same crop. If the new variety most closely resembles one or a group of related varieties; (1) identify these varieties and state all differences objectively; (2) Attach statistical data for characters expressed numerically and demonstrate that these differences are significant; and (3) submit, if helpful, seed and plant specimens or photographs of seed and plant comparisons clearly indicating novelty.

13c Fill in the Exhibit C, Objective Description form for all characteristics, for which you have adequate data.

13d Describe any additional characteristics that are not described, or whose description cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the description of characteristics that are difficult to describe; such as; plant habit, plant color, disease resistance, etc.

14A If "YES" is specified (seed of this variety be sold by variety name only as a class of certified seed) the applicant may NOT reverse his affirmative decision after the variety has either been sold and so labeled or published or the certificate has been issued. However, if the applicant specifies "NO", he may change his choice. (See Section 180.15 of the Regulations and Rules of Practice.)

12A. Exhibit A. Origin and Breeding History of Beau Wheat

Beau (CI 17420) was developed at the Purdue University Agricultural Experiment Station in cooperation with the Agricultural Research Service, United States Department of Agriculture.

Beau (Purdue 6559B5-6-6-6-1) was derived following the second backcross to Arthur to add resistance to Hessian fly of the "Ribeiro" (H_5) type.

The abbreviated parentage is: Arthur* 3/3/Purdue 6028A2-15-9-2/2/Riley*2/ Riley 67.

Purdue 6028A2-15-9-2 was the immediate source of "Ribeiro" resistance.

The detailed parentage of Beau is:

Arthur*3/14/Knox*4/8/Kawvale/5/Fultz/Hungarian/2/W38/3/
Wabash/4/Fairfield/6/Trumbull*3/2/Hope/Hussar/7/Knox/5/
Fairfield/4/P.I.94587/3/Fultz/Hungarian/2/Fultz/Hungarian/
12/Knox*4/8/Kawvale/5/Fultz/Hungarian/2/W38/3/Wabash/4/
Fairfield/6/Trumbull*3/2/Hope/Hussar/7/Knox/5/Fairfield/
4/P.I.94587/3/Fultz/Hungarian/2/Fultz/Hungarian/11/Knox*2/
7/Kawvale/5/Fultz/Hungarian/2/W38/3/Wabash/4/Fairfield/6/
Trumbull*3/2/Hope/Hussar/7/Knox/5/Fairfield/4/P.I.94587/3/
Fultz/Hungarian/2/Fultz/Hungarian/10/Knox*2/8/Kawvale/5/
Fultz/Hungarian/2/W38/3/Wabash/4/Fairfield/6/Trumbull*3/
2/Hope/Hussar/7/Knox/5/Fairfield/4/P.I.94587/3/Fultz/
Hungarian/2/Fultz/Hungarian/9/Kawvale/5/Fultz/Hungarian/
2/W38/Wabash/4/Fairfield/7/Vigo/Ribeiro/4/Trumbull/3/W38/
2/Fultz/Hungarian/6/Kawvale/5/Fultz/Hungarian/2/W38/3/
Wabash/4/Fairfield/8/Knox/LaPorte/13/Riley sib*2/Riley 67

The backcross method of breeding was used followed by pedigree selection.

The first cross to Arthur utilized F_1 plants from crosses of Purdue 6028A2-15-9-2 by the F_1's of Riley^2 x Riley 67.

In the subsequent two crosses back to Arthur, F_1 plants were used which had been identified as possessing the H_5 gene for resistance to Hessian fly. F_2 progenies of each F_1 parent plant were tested to race D of Hessian fly to verify that the F_1 parent carried the H_5 gene for resistance. Sufficient crosses were made at each step so that backcrosses not possessing resistance to Hessian fly could be discarded.

Following the final backcross, pedigree selection was made in the F_1, F_2, F_3 F_4, and F_5 generations of selfing.

Breeder's seed originated from the seed of 100 plant rows in the F_9 judged for uniformity of type in 1973. It was multiplied in 1974 and 1975. The breeder's seed first distributed in 1975 was in the F_{12} generation of selfing.

Beau has been quite uniform. Common wheat has been recognized as being almost completely self-pollinated.

77-31

March 24, 1977

WHEAT APPLICATION 7700031, 'BEAU'

Ammendment to Exhibit A

'Beau' has appeared uniform in type as judged in 100 plant rows in the F_9 generation and was uniform in type, in disease resistance, and in resistance to Hessian fly in Breeder's Seed tests in the F_{10}, F_{11} and F_{12} generations. Problem variants have not occurred.

Observations and testing for four generations in Breeder's Seed development indicate that the 'Beau' variety is true breeding through natural self-pollination of a homozygous variety.

00003

12B. Exhibit B. Data Indicative of Novelty

Beau is similar to Arthur, Arthur 71, Abe and Oasis in some characters but uniquely different from each.

Beau is distinct from Arthur by having the H_5 gene for resistance to Hessian fly and an erect flag leaf at booting.

Beau is distinct from Arthur 71, Abe, and Oasis by not having the LR9 gene for resistance to leaf rust.

Beau is distinct from Oasis also by general resistance rather than specific resistance (Bulgaria 88 source) to Septoria leaf blotch. Beau is distinct also from Arthur, Arthur 71, and Abe, which are susceptible to Septoria leaf blotch (Table 4).

Beau is distinct in having greater straw strength than Arthur, Arthur 71, Abe, or Oasis (Tables 1 and 2). Beau also averages shorter awnlets than these varieties (Table 3).

Beau is most similar to the variety Arthur.

FORM APPROVED. OMB NO. 40-R3712

FORM GR-470-6
(2-15-73)

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
HYATTSVILLE, MARYLAND 20782

EXHIBIT C
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY

WHEAT (*TRITICUM SPP.*)

INSTRUCTIONS: *See Reverse.*

NAME OF APPLICANT(S)
Purdue University, Agricultural Exp. Station & USDA-ARS

ADDRESS (*Street and No. or R.F.D. No., City, State, and ZIP Code*)
Agricultural Administration Building
West Lafayette, Indiana 47907

FOR OFFICIAL USE ONLY

PVPO NUMBER 7700031

VARIETY NAME OR TEMPORARY DESIGNATION
Beau
CI 17420

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. [0][8][9] or [0][9]) when number is either 99 or less or 9 or less.

1. KIND:

[1] 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:

[2] 1 = SPRING 2 = WINTER 3 = OTHER (*Specify*) _____ [1] 1 = SOFT 2 = HARD 3 = OTHER (*Specify*) _____

[2] 1 = WHITE 2 = RED 3 = OTHER (*Specify*) _____

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:

[2][2][8] FIRST FLOWERING [2][3][5] LAST FLOWERING

4. MATURITY (*50% Flowering*):

[ ][ ] NO. OF DAYS *EARLIER* THAN [ ] 1 = ARTHUR 2 = SCOUT 3 = CHRIS

[0][1] NO. OF DAYS *LATER* THAN [1] 4 = LEMHI 5 = NUGAINES 6 = LEEDS

5. PLANT HEIGHT (*From soil level to top of head*):

[0][8][6] CM. HIGH

[ ][ ] CM. TALLER THAN [ ] 1 = ARTHUR 2 = SCOUT 3 = CHRIS

[0][2] CM. SHORTER THAN [1] 4 = LEMHI 5 = NUGAINES 6 = LEEDS

6. PLANT COLOR AT BOOTING (*See reverse*):

[2] 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHER COLOR:

[1] 1 = YELLOW 2 = PURPLE

8. STEM:

[1] Anthocyanin: 1 = ABSENT 2 = PRESENT

[2] Waxy Bloom: 1 = ABSENT 2 = PRESENT

[1] Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT

[1] Internodes: 1 = HOLLOW 2 = SOLID

[0][4] NO. OF NODES (*Originating from node above ground*)

[2][0] CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:

[1] Anthocyanin: 1 = ABSENT 2 = PRESENT

[1] Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:

[1] Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER (*Specify*): _____

[1] Flag leaf: 1 = NOT TWISTED 2 = TWISTED

[1] Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT

[2] Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT

[1][1] MM. LEAF WIDTH (*First leaf below flag leaf*)

[2][2] CM. LEAF LENGTH (*First leaf below flag leaf*):

00005

77-31

FORM GR-470-6 (REVISED)

11. HEAD:

[1] Density: 1 = LAX 2 = DENSE

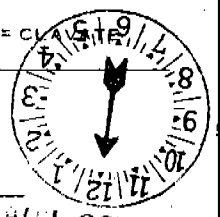
[2] Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE 4 = OTHER (Specify) _____

[2] Awnedness: 1 = AWNLESS 2 = APICALLY AWNLET 3 = AWNLETED 4 = AWNED

[2] Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED 5 = BROWN 6 = BLACK 7 = OTHER (Specify): _____

[0][8] CM. LENGTH

[1][2] MM. WIDTH



NOV 26 1976

12. GLUMES AT MATURITY:

[2] Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.) 3 = LONG (CA. 9 mm.)

[2] Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.) 3 = WIDE (CA. 4 mm.)

[1] 1 Glabrous 2 Pubescent

[3] Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED 4 = SQUARE 5 = ELEVATED 6 = APICULATE

[1] Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

13. COLEOPTILE COLOR:

[3] 1 = WHITE 2 = RED 3 = PURPLE

14. SEEDLING ANTHOCYANIN:

[2] 1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT:

[2] 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

[1] Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL

[1] Cheek: 1 = ROUNDED 2 = ANGULAR

[2] Brush: 1 = SHORT 2 = MEDIUM 3 = LONG

[1] Brush: 1 = NOT COLLARED 2 = COLLARED

[4] Phenol reaction (See instructions): 1 = IVORY 2 = FAWN 3 = LT. BROWN 4 = BROWN 5 = BLACK

[3] Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) _____

[0][6] MM. LENGTH

[0][3] MM. WIDTH

[3][6] GM. PER 1000 SEEDS

17. SEED CREASE:

[1] Width: 1 = 60% OR LESS OF KERNEL 'WINOKA' 2 = 80% OR LESS OF KERNEL 'CHRIS' 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

[1] Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT' 2 = 35% OR LESS OF KERNEL 'CHRIS' 3 = 50% OR LESS OF KERNEL 'LEMHI'

18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[2] STEM RUST (Races) 29, 38, 56

[1] LEAF RUST (Races) 76

[0] STRIPE RUST (Races) _____

[2] LOOSE SMUT

[2] POWDERY MILDEW

[0] BUNT

[ ] OTHER (Specify) _____

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[0] SAWFLY

[0] APHID (Bydv.)

[0] GREEN BUG

[1] CEREAL LEAF BEETLE

[ ] OTHER (Specify) _____

HESSIAN FLY RACES:

[2] GP [2] A [2] B [2] C

[2] D [2] E [2] F [2] G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Arthur	Seed size	Arthur
Leaf size	Arthur	Seed shape	Arthur
Leaf color	Abe	Coleoptile elongation	Arthur
Leaf carriage	Abe	Seedling pigmentation	Arthur

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

(a) L.W. Briggle and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.

(b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. *(See attachment.)*

LEAF COLOR: Nickerson's or any recognized color fan should be used to determine the leaf color of the described variety.

00006

12D. Exhibit D Botanical Description of Beau, CI 17420

Beau is a common soft red winter wheat, Triticum aestivum L.

Beau averaged one day later than Arthur in flowering date in nursery trials in 1971-74. At Lafayette Indiana when seeded about October 1 average first flowering is May 26 or about 228 days after emergence. Last flowering is about 7 days later. It is recognized that day length and seasonal temperatures influence flowering of varieties differentially.

Beau has averaged 86 cm in height, about 2 cm shorter than Arthur (Table 1).

At booting the plant color is dark green. Beau tends to be dark green similar to the darker green plants in Arthur.

Anther color of Beau is yellow like Arthur.

Anthocyanin has been generally absent in the stem of Beau as grown in Indiana. A moderate waxy bloom occurs on the stem becoming less apparent after flowering. Internodes are hollow. Stems are very strong and yellow at maturity (Tables 1 and 2). Normally 4 stem nodes are apparent above ground.

Beau is resistant to "node-bending" described in Agron. J. 49: 518-519, 1957.

The auricles are usually glabrous and generally lacking in anthocyanin.

Leaves are a dark green on young plants and dark green at booting. Flag leaves are medium in size and generally erect at booting. Later they become more horizontal and recurved. Flag leaves generally are not twisted. Hairs are absent on the first leaf sheath. A moderate level of waxy bloom occurs on the last leaf sheath. The first leaf below the flag leaf averages about 11 mm wide and 22 cm long.

Spikes are mid-dense (lax), oblong, apically awnletted, yellow and generally nodding at maturity. The awnlets of Beau are distinctly shorter than those of Abe, Arthur, or Arthur 71 (Table 3).

The frequency of the longest awnlet being 1.9 cm or less is about 75% for Beau, 6% for Abe, 26% for Arthur 71 and 24% for Arthur (Table 3).

Spike width and length are variable with production level and population, averaging about 12 mm wide and 6 cm long.

The glumes of Beau are mid-long and mid-wide. Shoulders are rounded (to oblique) and mid-wide. Beaks are obtuse and 0.5 to 1.0 mm long.

Coleoptile color of Beau is a light purple. Color sometimes occurs as a linear band covering only part of the coleoptile.

Exhibit D. xi

7700031

Seedling Anthocyanin has occurred infrequently in our observations.

Kernels are red in color and ovate in shape, with rounded cheeks and a mid-deep crease. The brush is medium in size and mid-long. The embryo is large in size. Kernels average 6 mm long and about 3 mm wide and about 36 g. per 1000. The phenol reaction is brown.

Beau has the H_5 resistance to Hessian fly derived from Ribeiro. It has been resistant to races A, B, C, and D in the greenhouse tests.

Resistance of the H_5 type is temperature sensitive. Research of R. L. Gallun, J. E. Foster at Purdue University in controlled climate tests showed Arthur 71 (H_5 gene) to be infested 1% at 65F, 9% at 70F, 42% at 75F and 97% at 85F. In certified fields in Indiana in 1971-72 Arthur 71 was infested only 1.9% vs 8.3% for Arthur.

Beau has been tested in nursery plots at Lafayette, Indiana for 5 years 1971-75, in field plots in Indiana for 2 years 1974-75, and in the Uniform Eastern Soft Wheat Nursery in 1975. Beau has yielded well and has excelled in straw strength (Tables 1 and 2).

Beau has been resistant to powdery mildew in seedling and adult plant stages at Lafayette, Indiana (Table 4). It has had a low infection of susceptible type in leaf rust tests (Table 4). It is susceptible to leaf rust race 76 in seedling tests. Beau has been susceptible to cultures of stem rust race 15B in contrast to the resistance of Arthur 71, Abe and Oasis in seedling tests of the 1975 Uniform Eastern Soft Wheat Nursery by D. V. McVey, Cereal Rust Laboratory, ARS, University of Minnesota, St. Paul, MN.

Beau has been resistant to races of loose smut in Indiana.

Beau has shown a susceptible (high fruiting) reaction to Septoria tritici in the young plant stage in contrast to the resistant reaction of Oasis, but has shown a general resistance in maintaining green flag leaves later in the epidemic (Table 4). (Also Shaner, G. E., R. E. Finney, F. L. Patterson. 1975. Expression and effectiveness of resistance in wheat to Septoria leaf blotch under natural epidemics. Phytopathology 65:761-766.)

Bean has been generally similar to Arthur (and to the line Purdue 6559B5-6-6-6 from which it was selected) in milling and baking qualities (Tables 5 and 6).

Table 1. Performance of wheats in advanced nursery plots at Lafayette, Ind. average of 4 years, 1971-74.

Variety or line	Yield, (bu/A)	Test weight (lb/bu)	Pre-ripe straw score* (0-9)	Plant height (in.)	Days later than Arthur
6559B5-6-6-6-1(Beau)	61.2	59.5	2.5	34	1
6559B5-6-6-6*	60.5	58.9	2.4	34	2
Arthur 71	57.7	58.9	4.2	36	1
Abe	63.3	58.7	3.8	35	1
Arthur	62.6	59.0	3.9	35	0
Oasis	62.1	58.8	4.3	36	2
Monon	58.8	58.6	4.5	37	-1

* Line from which 6559B5-6-6-6-1 was selected and for which a longer testing record is available.

** Straw scored from 0 (erect) to 9 (lodged flat).

Table 2. Performance of wheats in field plot trials in several locations in Indiana.

Variety or line	1972**	1973†	1974‡
		Yield, (Bu/A)	
6559B5-6-6-6-1 (Beau)	-	-	64.6
6559B5-6-6-6*	77.2	59.2	68.6
Arthur 71	67.2	54.1	56.5
Abe	73.6	56.1	62.5
Arthur	74.2	51.8	63.3
Oasis	64.8	56.2	56.6
Monon	54.5	47.4	40.4
		Test Weight (Lbs/Bu)	
6559B5-6-6-6-1 (Beau)	-	-	60.6
6559B5-6-6-6	58.8	59.7	60.5
Arthur 71	58.3	58.6	59.6
Abe	58.4	58.1	59.9
Arthur	58.6	58.8	60.0
Oasis	58.2	58.9	59.6
Monon	57.3	57.0	57.3
		Lodging (Percent)	
6559B5-6-6-6-1 (Beau)	-	-	15
6559B5-6-6-6	8	3	17
Arthur 71	36	7	56
Abe	34	7	40
Arthur	29	10	53
Oasis	44	7	60
Monon	40	21	54

Table 2. (Continued).

Variety or line	1972	1973	1974
		Plant Height (Inches)	
6559B5-6-6-6-1(Beau)	-	-	38
6559B5-6-6-6	38	38	39
Arthur 71	40	38	40
Abe	39	36	38
Arthur	40	38	40
Oasis	40	39	40
Monon	42	40	41
		Maturity (Days Later than Arthur)	
6559B5-6-6-6-1(Beau)	-	-	0
6559B5-6-6-6	1	0	0
Arthur 71	0	0	0
Abe	0	0	0
Arthur	0	0	0
Oasis	1	0	0
Monon	0	0	0

* Purdue 6559B5-6-6-6 is the line from which 6559B5-6-6-6-1 was selected for homozygous resistance to Hessian fly and for which a longer test record is available.

** Average of 5 tests at 4 locations of field plots conducted by K. M. Day and O. W. Luetkemeier. Data on named varieties are published in Purdue Res. Bull. 896, 1973.

† Averages of 3 tests at 2 locations of field plots conducted by K. M. Day and O. W. Luetkemeier. Data on named varieties are published in Purdue Bull. 32, 1974.

‡ Averages of 3 tests at 3 locations (omitting Gibson Co.) of field plots of K. M. Day and O. W. Luetkemeier. Data for named varieties are published in Purdue Bull. 56, 1974.

Table 3. Awnlet Characteristics.

Tip awnlet length class (cm)	Frequency of longest awnlet per spike			
	Beau	Abe	Arthur	Arthur 71
0-1.9	75	6	24	26
2-2.9	21	26	38	41
3-3.9	4	50	30	30
4-4.9	0	15	8	3
5-5.9	0	3	0	0
Total	100	100	100	100

The longest tip awnlet per spike of Abe, Arthur and Arthur 71 is almost never shorter than 1.0 cm whereas for Purdue 6559B5-6-6-6-1 about 18% are shorter than 1.0 cm.

Table 4. 1974 crop advanced yield nursery data, Lafayette, Indiana.

	Powdery Mildew		Leaf rust		Spindle streak (0-4)	Mosaic Ill. (0-5)[4]	Septoria tritici	
	Seedling[1]	Field (%)	Seedling 659-1[2]	Adult Stem Rust Nurs.[3]			Reaction 6-11-75[5]	% of flag leaf killed[6]
Beau	0-1	0	78C	2-10S	2	3.5	8E	20
6559B5-6-6-6	0-1	0-tr	78C/01C	2-15S	2	3.5	7C	20
Arthur 71	0-1	0	03C	0-trMS	3	3.5	6C	50
Abe	0-1	0	02C	0-trMS	3	3.0	7C	30
Arthur	0-2	0	77C	tr-10S	3	3.5	7D	40
Oasis	0-1	0	01C	0-trMS	2	3.5	6A	5
Monon	4	15	88C	30S	1	1.5	9D	100
Knox 62	4	10	88C	30S	3	3.0	7C	40

1 Reactions 0-4.
2 Race 76.
3 Leaf rust races 5, UN9, 30, 35, 76, 104, and 145.
4 Av. 2 replications.
5 Lesion size (0-9) and amount of fruiting (A-E).
6 Read 6-20-74.

Table 5. Quality determinations from 20-pound samples milled on an Allis mill.

Character measured	Arthur 1972*	Arthur 1973	Arthur 1974	Arthur 3 yr Av	6559B5-6-6-6 1972	6559B5-6-6-6 1973	6559B5-6-6-6 1974	6559B5-6-6-6 3 yr Av	6559B5-6-6-6-1 Beau 1974
Test weight (lb/bu)	62.7	59.9	61.9	61.5	63.0	60.8	62.8	62.2	62.5
Wheat Protein (%)	11.0	11.9	13.2	12.0	10.7	12.6	13.3	12.2	13.5
Pearling Index (%)	43.8	55.8	45.8	48.5	41.6	53.0	46.2	46.9	45.6
Particle Size Index (%)	18.1	22.7	19.2	20.0	18.5	25.5	21.3	21.4	20.1
Flour Yield (%)	73.7	74.1	72.5	73.4	71.1	72.3	71.5	71.6	71.8
Flour Ash (%)	0.44	0.40	0.41	0.42	0.41	0.40	0.40	0.40	0.42
Flour Protein (%)	9.9	10.5	11.7	10.7	9.3	10.9	11.9	10.7	11.9
Viscosity Adj (°Mac M.)	103	92	-	98**	126	92	-	109**	-
AWRC (%)	52.2	50.4	51.8	51.5	50.3	51.2	53.1	51.5	53.6
Cookie Diam (cm)	17.8	17.4	17.1	17.4	17.9	17.2	17.2	17.4	17.0
Cookie Top Grain	8	7	5	7	8	6	6	7	6

* Samples from one location (Lafayette) in 1972, and of composites locations in 1973, and in 1974.

** 2-year average.

Table 6. Quality of nursery samples tested at the Soft Wheat Quality Laboratory, Wooster, Ohio, 4-year av., 1971-74.*

Character measured	Arthur	Beau	6559B5 -6-6-6**	Redcoat
Test weight (lb/bu)	62.5	62.7	62.0	62.0
Wheat Protein (%)	13.1	13.5	13.9	13.3
Pearling Index (%)	47.5	47.1	46.6	38.6
Particle Size Index (%)	20.0	22.8	22.0	18.0
Flour Yield (%)	68.5	65.1	64.9	64.3
Flour Ash (%)	0.43	0.41	0.41	0.43
Flour Protein (%)	12.1	12.4	12.3	11.7
AWRC (%)	53.1	53.6	53.5	55.9
Cookie Diam. (cm)	18.5	18.3	18.3	18.1
Cookie Top Grain	7.3	8.0	6.8	6.0

* Quadrumat Milling

** Purdue 6559B5-6-6-6 is the line from which Beau was selected in F_5 and for which a longer test record is available.

77-31

WHEAT APPLICATION 7700031 ('BEAU')

Explanation of anthocyanin on plants of 'Beau'

Beau plants have the genetic capability of developing low levels of anthocyanin. This is expressed on the coleoptile and usually on the young seedlings. Under usual environmental conditions in Indiana, anthocyanin is not expressed on the stems or auricles. If plants are infected with barley-yellow-dwarf virus, for example, some anthocyanin may be expressed on stems and auricles.

77-31

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL MARKETING SERVICE
14th and Independence Avenue, Rm. 1634

WASHINGTON, D.C. 20250

PLANT VARIETY PROTECTION OFFICE

Gentlemen:

Subject: Application No. 7700031
Variety and Kind - 'Beau' - Wheat

As provided in section 83(a) of the Plant Variety Protection Act, 7 U.S.C. 2321, we request that the Certificate on the above variety be issued with a notation on each Certificate that the right to exclude others from selling, offering for sale, reproducing, importing or exporting the variety covered by this Certificate, or using it in producing a hybrid or different variety is waived.

It has been agreed that the certificate should be issued in the name(s) of:

Purdue University Agricultural Experiment Station

and the United States Department of Agriculture

4/25
(Date)

(Signature)

00017